

## **REMARKS**

In response to the above-identified Final Office Action (“Action”), Applicant submits the following remarks and seeks reconsideration thereof. In the instant response, claims 1, 5 and 13 are amended, no claims are added and claims 2 and 4 are cancelled. Accordingly, Claims 1, 3 and 5-14 are pending.

The instant application claims a composite polymer electrolyte for a lithium secondary battery, which comprises a first polymer matrix made of a first porous polymer with a first pore size wherein the first porous polymer is polyethylene, polypropylene, polyimide, polysulfone, polyurethane, polyvinylchloride, cellulose, nylon, polyacrylonitrile, polyvinylidene fluoride, polytetrafluoroethylene, a copolymer or blend thereof; a second polymer matrix coated on the first polymer matrix and made of a single ion conductor, an inorganic material, and a second porous polymer with a second pore size smaller than the first pore size, wherein the second porous polymer is a vinylidene fluoride based polymer, an acrylate based polymer, a copolymer or a blend thereof; and an electrolyte solution impregnated into the first polymer matrix and the second polymer matrix.

### **I. Finality Premature**

Applicant respectfully requests withdrawal of the finality of the Action on the basis that it is premature. In the instant Action, the Examiner cites to “OEM GE PVDF Transfer Membranes” and “Small Parts, Inc.” as evidence of the pore sizes of PVDF and polyethylene. The Examiner seems to be relying upon these resources in support of the Examiner’s apparent reliance on common knowledge in the previous Office Action wherein the Examiner stated that different types of polymers would have different pore sizes and therefore the claimed second polymer having a smaller pore size than the first polymer would be obvious. The Examiner, however, has not previously cited to these resources nor has the Examiner provided any documentation of the information apparently provided by “OEM GE PVDF Transfer Membranes” and “Small Parts, Inc.” Moreover, Applicant is not even sure what the phrases “OEM GE PVDF Transfer Membranes” and “Small Parts, Inc.” refer to much less how Applicant may review the information relied upon by the Examiner from these citations. As the Examiner is no doubt aware, “it is never appropriate to rely solely on common knowledge in the art without evidentiary support in the record as the principal evidence upon which a rejection is based.” See In re Zurko, 258 F.3d 1379, 1386 (Fed. Cir. 2001). Applicant respectfully submits citations to

resources which have not been provided to the Applicant for review and are further so unclear that Applicant is unable to find the resources does not qualify as “evidentiary support” required when claims are finally rejected based on common knowledge.

In view of the foregoing, Applicant respectfully submits the finality of the Action is improper. Accordingly, Applicant respectfully requests reconsideration and withdrawal of the finality of the Action.

## **II. Claim Amendments**

Applicant respectfully submits herewith amendments to claims 1, 5 and 13. In particular, claim 1 is amended to incorporate the limitations of now cancelled claims 2 and 4 and claim 13 is amended to incorporate the limitations of now cancelled claims 2 and 4. Moreover, claim 5 is amended to depend from claim 1 instead of now cancelled claim 4. Thus, since claims 1 and 13 merely incorporate limitations previously presented in the claims and claim 5 is amended to depend from claim 1, the amendments do not add new matter and are supported by the specification. In view of the foregoing, Applicant respectfully requests consideration and entry of the amendments to claims 1 and 13.

## **III. Claim Rejections – 35 U.S.C. §102(e) and §103(a)**

In the outstanding Action, claims 1-14 stand rejected under 35 U.S.C. §102(e) as being anticipated by, or in the alternative, under 35 U.S.C. §103(a) as obvious over Munshi, ("Munshi"), U. S. Patent No. 6,645,675. Applicant respectfully traverses the rejection for at least the following reasons.

It is axiomatic that to anticipate a claim, every element of the claim must be disclosed within a single reference. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Moreover, to establish a *prima facie* case of obviousness, the Examiner must show that the cited reference teaches or suggests each of the elements of a claim. Hindsight reconstruction may not be used to modify the reference to meet the claimed invention. MPEP §2145.

In regard to independent claims 1 and 13, Applicant respectfully submits Munshi fails to teach or suggest at least the elements of a first polymer matrix made of a first porous polymer

with a first pore size and **a second polymer matrix coated on the first polymer matrix** and made of a single ion conductor, an inorganic material, and a second porous polymer with a second pore size smaller than the first pore size as required in claims 1 and 13. That is, the first polymer matrix and the second polymer matrix are two separate films stacked in order of their pore sizes. The distinction between these two films is further clarified by the amendments to claims 1 and 13 in which it is recited that the composite polymer electrolyte comprises a first polymer matrix made of a first porous polymer wherein the first porous polymer is made of polyethylene, polypropylene, polyimide, polysulfone, polyurethane, polyvinylchloride, cellulose, nylon, polyacrylonitrile, polyvinylidene fluoride, polytetrafluoroethylene, a copolymer or blend thereof and a second polymer matrix made of a second porous polymer wherein the second porous polymer is made of a vinylidene fluoride based polymer, an acrylate based polymer, a copolymer or a blend thereof.

The Examiner alleges Munshi teaches a first porous polymer is polyvinylidene fluoride (col. 6, lines 35-45) and a second polymer is a vinylidene fluoride based polymer (col. 7, lines 1-5) and therefore teaches the claimed first and second polymer matrix having a first pore size and a second pore size smaller than the first pore size. See Action, page 3. In the alternative, the Examiner alleges although Munshi fails to teach the second pore size smaller than the first pore size of the first polymer, “if the first polymer is a different type of polymer from the second polymer, they would have different sizes; and from the list of polymers in the prior art of record, the second polymer would have a smaller pore size than the first polymer” therefore these features are obvious. See Action, pages 3-4. Applicant respectfully disagrees with the Examiner’s characterization of Munshi.

Munshi teaches a solid polymer electrolyte comprising a base polymer material comprising at least two polymers. However, the base polymer material of Munshi forms a single layer, i.e. a thick layer of a solid polymer electrolyte 70. See Munshi, col. 25, lines 37-40; col. 26, lines 12-15 and Figures 1B, 2 and 3. Even examples 1-5 and other embodiments of Munshi do not teach or suggest a polymer electrolyte comprising two separate films having different pore sizes from each other. See Munshi, cols. 18-20. In fact, Munshi suggests nothing about the pore sizes of the listed polymers much less selecting a second porous polymer having a smaller pore size than a first porous polymer in constructing the described electrolyte. Accordingly, even if

the pore sizes of the listed polymers may vary, Munshi does not teach or suggest coating a first polymer matrix with a second polymer matrix wherein the second polymer matrix includes a second porous polymer having a second pore size smaller than a first pore size of a first porous polymer of the first polymer matrix as recited in claims 1 and 13.

Moreover, in finding the claims obvious, the Examiner alleges Munshi teaches a first porous polymer is polyvinylidene fluoride(PVDF) (col. 6, lines 35-45) and a second porous polymer is a vinylidene fluoride based polymer (col. 7, lines 1-5). See Action, page 3. The Examiner alleges since the polymers are different and since the pore size of PVDF ranges from 0.22 to 0.45 microns and the pore size of polyethylene ranges from 10 to 120 microns, the first and second polymers would have different pore sizes. See Action, page 4. The above statements, however, are inconsistent and do not support the Examiner's finding of obviousness. In particular, the Examiner relies upon a first polymer of Munshi as PVDF and a second polymer as a vinylidene fluoride based polymer in rejecting the claims, not the combination of PVDF and polyethylene. Moreover, PVDF appears to have a smaller pore size than polyethylene, thus even if PVDF as a first porous polymer and polyethylene as a second porous polymer are selected, the combination would not teach or suggest a second porous polymer (polyethylene) having a smaller pore size than the first porous polymer (PVDF) as is required by claims 1 and 13.

For at least the foregoing reasons, Munshi fails to teach or suggest all the elements of claims 1 and 13. Thus, neither anticipation nor a *prima facie* case of obviousness may be established. In view of the foregoing, Applicant respectfully requests reconsideration and withdrawal of the rejection of claims 1 and 13 under 35 U.S.C. §102(e) as being anticipated by, or in the alternative, under 35 U.S.C. §103(a) as obvious over Munshi.

In regard to claims 3, 5-12 and 14, claims 3, 5-12 depend from claim 1 and claim 14 depends from claim 13 and incorporate the limitations thereof. Thus, for at least the reasons that Munshi fails to anticipate, or in the alternative render claims 1 and 13 obvious, claims 3, 5-12 and 14 are also not anticipated or obvious in view of Munshi. In view of the foregoing, Applicant respectfully requests reconsideration and withdrawal of the Examiner's rejection of claims 3, 5-12 and 14 under 35 U.S.C. §102(e) as being anticipated by, or in the alternative, under 35 U.S.C. §103(a) as obvious over Munshi.

### CONCLUSION

In view of the foregoing, it is believed that all claims now pending, namely claims 1, 3 and 5-14, patentably define the subject invention over the prior art of record, and are in condition for allowance and such action is earnestly solicited at the earliest possible date. If the Examiner believes that a telephone conference would be useful in moving the application forward to allowance, the Examiner is encouraged to contact the undersigned at (310) 207 3800.

Respectfully submitted,

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### CERTIFICATE OF MAILING:

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Mail Stop Af, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on May 19, 2006.

  
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